

Advanced Spatial Information Application on Big Data for Massive Sensors Data

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With the advances in geospatial information technologies, monitoring sensors and cloud computing techniques have been widely used in almost every field globally. Most sensors for monitoring from remotely or on-site facilities, such as rain gauges, surveillance cameras, or micro meteorology detectors, are carrying out a long period of observation, which results in a rapid accumulation of observation records in databases and enormous demand on computing resources. Meanwhile, the interoperability among monitoring information generated by different facilities remains a big issue when different disciplines desire to access those sensor resources for interdisciplinary applications. This presentation examines issues of massive data processing and interoperability by presenting the monitoring systems output application. It also intends to propose a solution to those issues by adopting Cloud Computing and geospatial standards.

This presentation also proposes a method for storing large-scale monitoring data that adopting cloud-based distributed database-HBase along with standards for data exchanges. In the case study, Sensor Web Enablement (SWE) was implemented, and the practice of using SOS, SPS, and SAS had shown the benefits of interoperability. The goal of SWE is to enable all types of Web and Internet-accessible massive sensors data, instruments, and imaging devices to be accessible and, where applicable, controllable via the Web. The successful example of SWE on monitoring network indicates the remarkable outcomes of interoperability, and this will encourage the application of SWE in the future.